

Bull. Natn. Sci. Mus., Ser. A (Zool.), 1 (3), September 22, 1975

A New *Kurasawatrechus* (Coleoptera, Trechinae) from a Sandstone Cave of Central Japan¹⁾

By

Shun-Ichi UÉNO

Department of Zoology, National Science Museum, Tokyo

In the summer of 1972, a specimen of an anophthalmic trechine beetle was discovered by Dr. Kintaro BABA for the first time in a sandstone cave of Japan. It was described later under the name of *Kurasawatrechus kyokoae* (UÉNO & BABA, 1974, p. 195, figs. 1-3), and was considered to have been derived from an endogeal ancestor, whose direct descendant is represented at present by *K. endogaeus* (UÉNO & BABA, 1965, p. 17, figs. 1-2).

In the present paper, the writer is going to describe a new species of *Kurasawatrechus* found in another sandstone cave of central Japan. As in the case of *K. kyokoae*, this species also seems to have been derived from an endogeal ancestor, one of whose direct descendants still survives in the subalpine forest of the Northern Japanese Alps. It seems worthy of noticing that in both the cave species, appendages have become slenderer than those in their endogeal relatives, although their speciation seems to have commenced merely in the late Pleistocene or even in the Postglacial Age.

This new trechine was first met with by Mr. Masahiro TANAKA and made known to the present writer through the courtesy of Mr. Masataka SATÔ. Sufficient material of the species was brought about by the painstaking efforts of Mr. Hiroshi IWASAKI, though its type cave was repeatedly investigated by some entomologists and biospeleologists after the discovery. To all these friends, the writer wishes to express his hearty thanks.

Kurasawatrechus agiensis S. UÉNO, sp. nov.

(Figs. 1-2)

Length: 3.00-3.35 mm (from apical margin of clypeus to apices of elytra).

Closely allied to *K. tanakai* S. UÉNO (1974, p. 265, figs. 1-3) of Mt. On-také, with which it agrees in every detail with the exception of the features noted below. The most pronounced difference between the two species is in the sternites, which are pubescent in *K. tanakai* but glabrous in *K. agiensis*.

Slightly larger and more elongate in facies than *K. tanakai*, mainly owing to longer fore-body. Colour as in the latter species, but the antennae (except for segments 2-4)

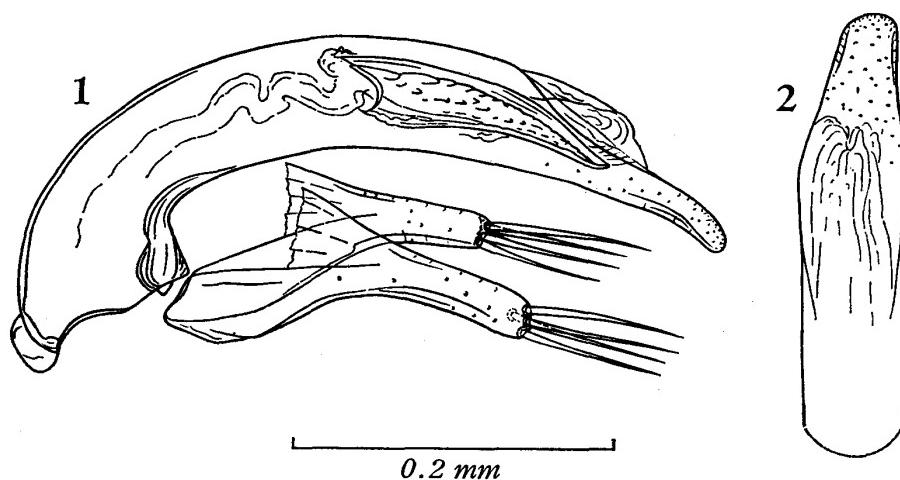
1) Contribution No. 154 from the Spelaeological Society of Japan.

and legs are yellowish brown.

Head narrower and more quadrate than in *K. tanakai*, with much less convex genae, less arcuate and anteriorly less divergent frontal furrows, and slenderer buccal appendages; antennae longer and obviously slenderer than in *K. tanakai*, reaching basal one-third of elytra or extending a little beyond that level, with segments 7–10 oblong-oval, each less than a half as wide as long. Pronotum evidently more elongate than in *K. tanakai*, widest at about five-sevenths from base, with the sides more widely and less strongly arcuate in front and more shallowly sinuate at about basal two-sevenths; PW/HW 1.35–1.40 (M 1.37), PW/PL 1.04–1.13 (M 1.09), PW/PA 1.27–1.32 (M 1.29), PW/PB 1.27–1.35 (M 1.29), PB/PA 0.98–1.01 (M 1.00);²⁾ apex as wide as base; front angles smaller, more advanced and more pointed than in *K. tanakai*, hind angles somewhat sharp; basal foveae somewhat deeper and more sharply defined. Elytra a little more convex than in *K. tanakai*, with the sides more regularly arcuate and more oblique at the basalmost portion; EW/PW 1.54–1.61 (M 1.57), EL/EW 1.37–1.45 (M 1.41); striae shallower and finer than in *K. tanakai* even on the disk, effaced altogether at the side with the exception of stria 8 which is moderately impressed, stria 5 usually traceable except near base but sometimes evanescent; scutellar striole vestigial, frequently absent; apical striole long, moderately impressed and nearly straight in front, joining stria 5 or directed to its site; apical carina more obtuse at the anterior part than in *K. tanakai*.

Prosternum with several hairs at the median part. Sternites practically glabrous, at most with a few minute hairs on the basalmost segment between metacoxae. Legs slenderer and a little longer than in *K. tanakai*.

Male genitalia similar to those of *K. tanakai*. Aedeagus more regularly arcuate, with shorter and less curved basal part and larger basal orifice; sagittal aileron small



Figs. 1–2. *Kurasawatrechus agiensis* S. UÉNO, sp. nov., of Agi-dô Cave in Gifu Pref. — 1. Male genitalia, left lateral view. — 2. Apical part of aedeagus, dorsal view.

2) For abbreviations, refer to other papers by UÉNO.

though distinct; apical lobe narrower in lateral view and a little broader in dorsal view; ventral side widely emarginate in profile. Styles longer than those in *K. tanakai*, each provided with four apical setae.

Type-series. Holotype: ♂ (21-IV-1974, H. IWASAKI leg.). Allotype: ♀ (16-III-1975, H. IWASAKI leg.). Paratypes: 1 ♀ (12-XI-1972, M. TANAKA leg.); 1 ♀ (27-X-1974, H. IWASAKI leg.); 3 ♂♂, 2 ♀♀ (16-III-1975, H. IWASAKI leg.). All preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Type-locality. Sandstone cave called "Agi-dô", at Hachiyado of Agi in Nakatsugawa-shi, Gifu Prefecture, central Honshu, Japan.

Notes. This new trechine is so similar to *K. tanakai* that it could be regarded as a subterranean race of the latter, were it not for the decisive difference in the abdominal pubescence. All the other features separating the former from the latter, which can be summarized in the longer fore-body and slenderer appendages, are adaptive, having been resulted from a more specialized, subterranean mode of life. The direct relationship between the two forms is also supported by the fact that their male genitalia are very similar to each other, even though the genitalic differentiation is usually not so pronounced in the genus *Kurasawatrechus*. It is doubtless that they have been derived from a common ancestor, and that *K. tanakai* is closer to the ancestral form than *K. agiensis*. Thousands of years ago, this ancestral trechine must have spread rather widely in the hilly areas to the northeast of the Nôbi Plain, but seems to have retreated to higher altitude in the Postglacial Age. Only certain descendants which could successfully colonize the hypogean domain have survived until now at low places, such as Agi-dô Cave which lies about 500 m above sea-level. This hypothesis seems also to explain why the two, closely allied anophthalmic trechines occur in different mountain systems: Mt. On-také is situated near the southern end of the Northern Japanese Alps or the Hida Mountain Range, while Agi-dô Cave lies in the southwestern extension of the Central Japanese Alps or the Kiso Mountain Range.

Agi-dô is a small cave lying in a shell-bearing sandstone of the Mizunami Group, which belongs to the middle Miocene, and is about 59 km apart to the south from Nigorigô on Mt. On-také. It is developed along a subterranean stream and is very simple in structure, although dripstone formations are found here and there as in limestone caves. Habitats of terrestrial cavernicoles are restricted to very narrow banks of the stream, and are not so favourable as a whole. The cave was first investigated by the present writer with the aid of Dr. Teizi KAWAI on July 2, 1953, but did not yield any trechine. Since then, it had been forgotten by speleologists for about twenty years till the autumn of 1972, when the present new species was discovered by Mr. TANAKA. Renewed efforts have been made to obtain additional specimens of the trechine, but only three isolated individuals, one at a time, have been taken in spite of repeated collectings. Finally, five more specimens were caught in baited traps early in the spring of this year, and enabled the writer to describe the species as new to science.

References

- UÉNO, S.-I., 1974. A new subalpine species of the genus *Kurasawatrechus* (Coleoptera, Trechinae). *Kontyû, Tokyo*, **42**: 265-269.
- & K. BABA, 1965. Occurrence of a new *Kurasawatrechus* (Coleoptera) in an endogean habitat. *Bull. Natn. Sci. Mus., Tokyo*, **8**: 17-21, pl. 1.
- & — 1974. *Kurasawatrechus kyokoae*, a new anophthalmic trechine beetle found in a sandstone cave of Japan. *Annot. zool. Japon.*, **47**: 194-198.